Morganza to the Gulf of Mexico

System-Wide TABS-MD Numerical Model

Purpose

- To assess the impact of the proposed project on the general trend of flow distribution and salinity intrusion along the main channels and lakes
- To develop the preliminary design of the Environmental Structures

Procedure

- A “mesh” is built using a geo-referenced image. The mesh consists of adjoining elements, rectangles and triangles that convey information between adjoining lines.

- Survey data can then be imported into the file and merged with the existing geometry.

Procedure, continued

- Hydraulic properties, like Manning's n, marsh porosity, and Eddy diffusivity, are then assigned to the elements
- Boundary conditions are added
- Model is run and parameters adjusted to verify results by comparing model solution data with measured data. When verified, this is called base conditions

Procedure, continued

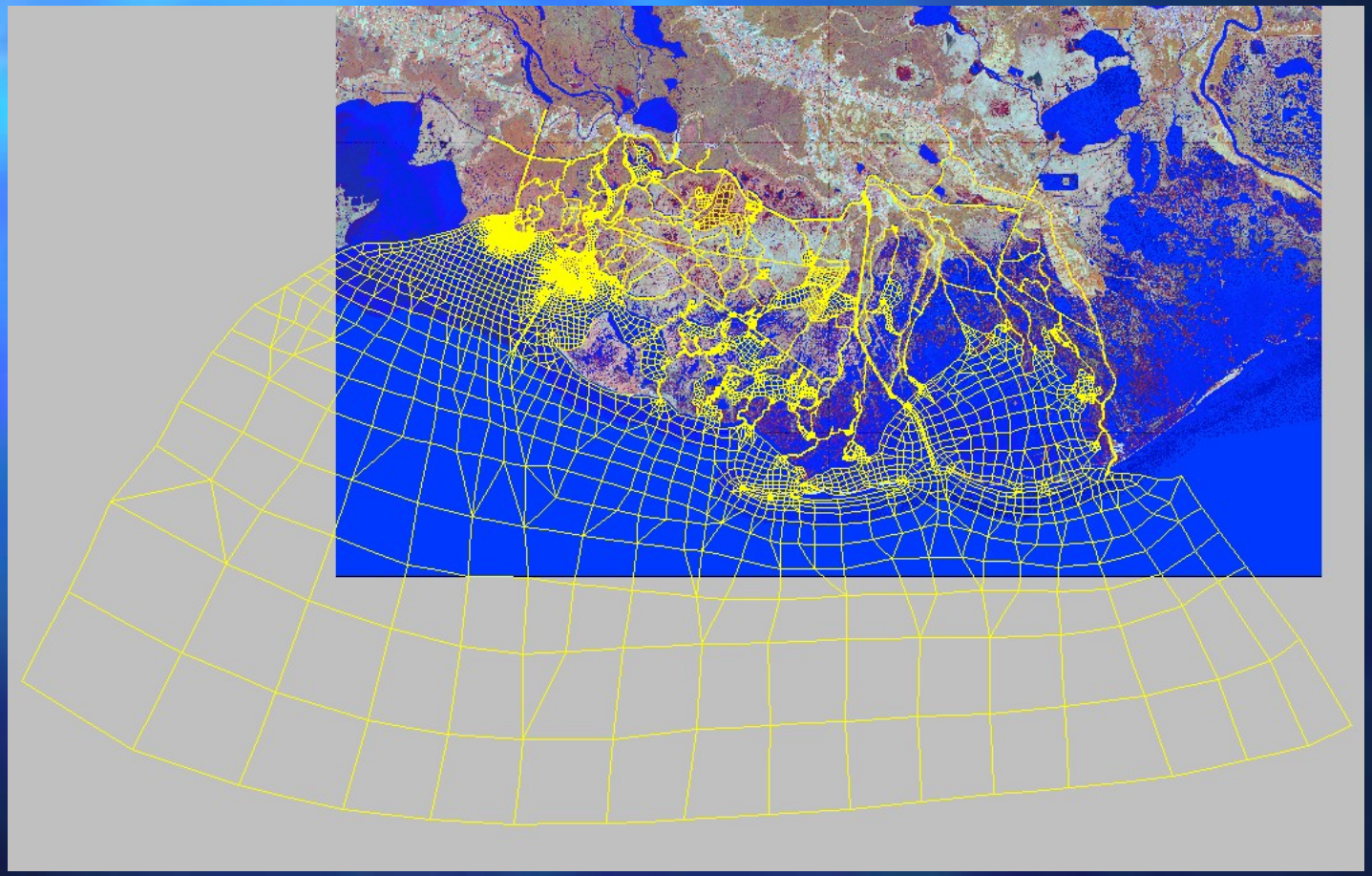
- Points of recorded flow and stage:

GIWW at Houma Navigation Canal	Bayou Petite Caillou at Cocodrie
Grand Bayou Canal S of Bayou L'Eau Bleu	GIWW E of Larose
GIWW W of Minors Canal	Houma Navigation Canal S of B. Gr. Caillou
Falgout Canal W of Bayou Dularge	Bayou Grand Caillou W of HNC
Bayou Petite Caillou N of Cocodrie	Bush Canal near B. Petite Caillou
Bayou Dularge S of Falgout Canal	B. Petite Caillou nr proposed levee crossing
B. Pointe Aux Chenes W of Grand B. Canal	Humble Canal E of Bayou Terrebonne

Procedure, continued

- After verification, changes are made in the model to represent proposed changes, results are compared and conclusions are drawn
- Future flows will be considered if applicable

System-Wide Model Mesh



Benefits to the MTOG Project

- The model will be able to track general changes in the flow distribution and salinity intrusion by directly comparing data at specific points

- The environmental structures will be modeled as simulated openings in order to determine if the initial flows and locations are appropriate to maintain current conditions

Status of Modeling Effort

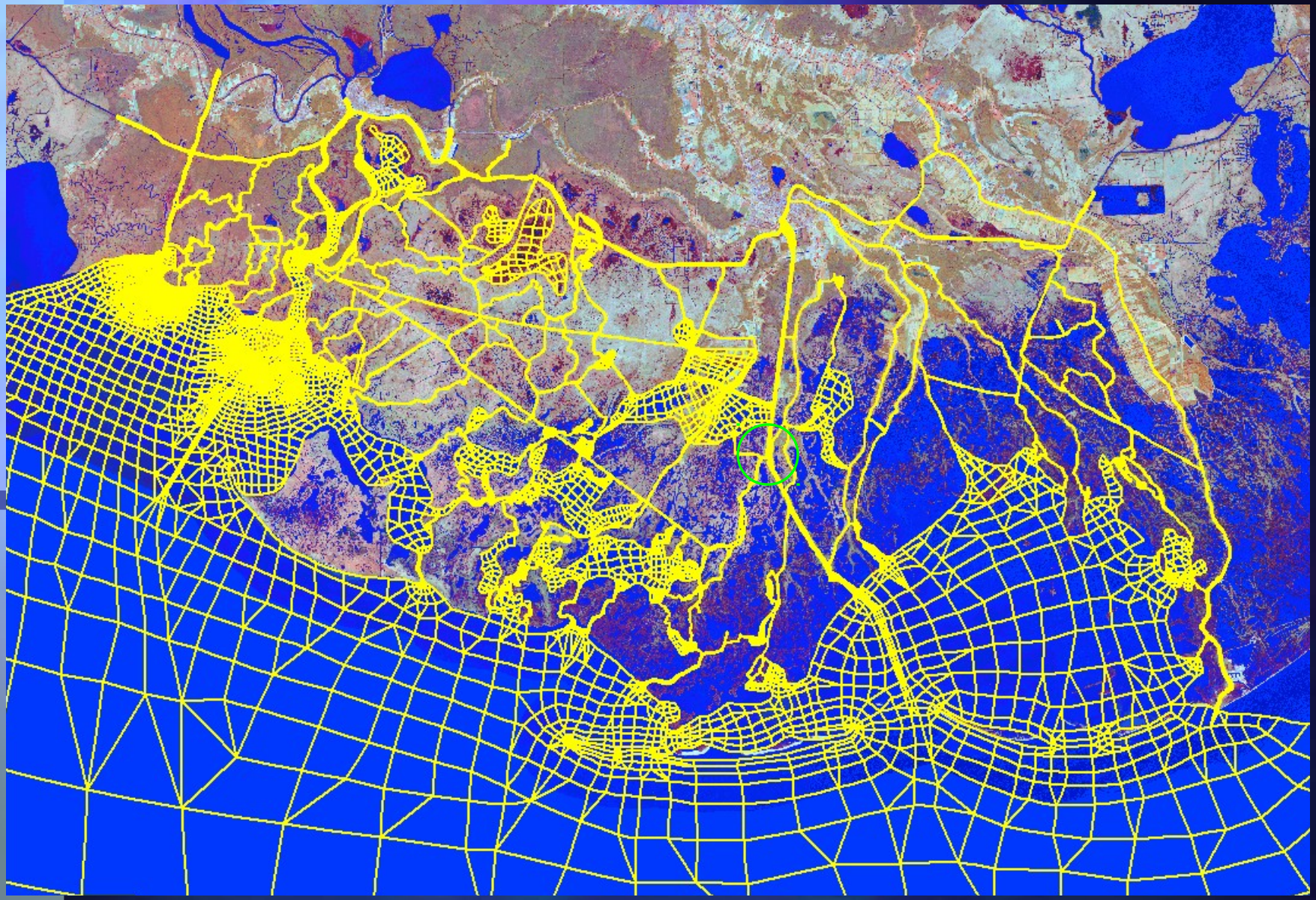
- The model geometry is about 80% complete.
- Remaining items before first run:
  - The bathymetry has to be manually put in for the areas that have no survey data available
  - The hydraulic properties and material types need to be defined

Funding Requirements

- An estimated $33,000 will be required for completion of base conditions and production runs with alternatives.

Schedule for Completion

- Project is expected to be completed in October 2005



11/04/2004

HNC Lock Complex

Bayou Grand Caillou Floodgate Design

HEC RAS Numerical Model

Model Purpose

- Establish the width, invert elevation, and approximate location of gate to allow for safe navigation, flood control, and acceptable seasonal flow

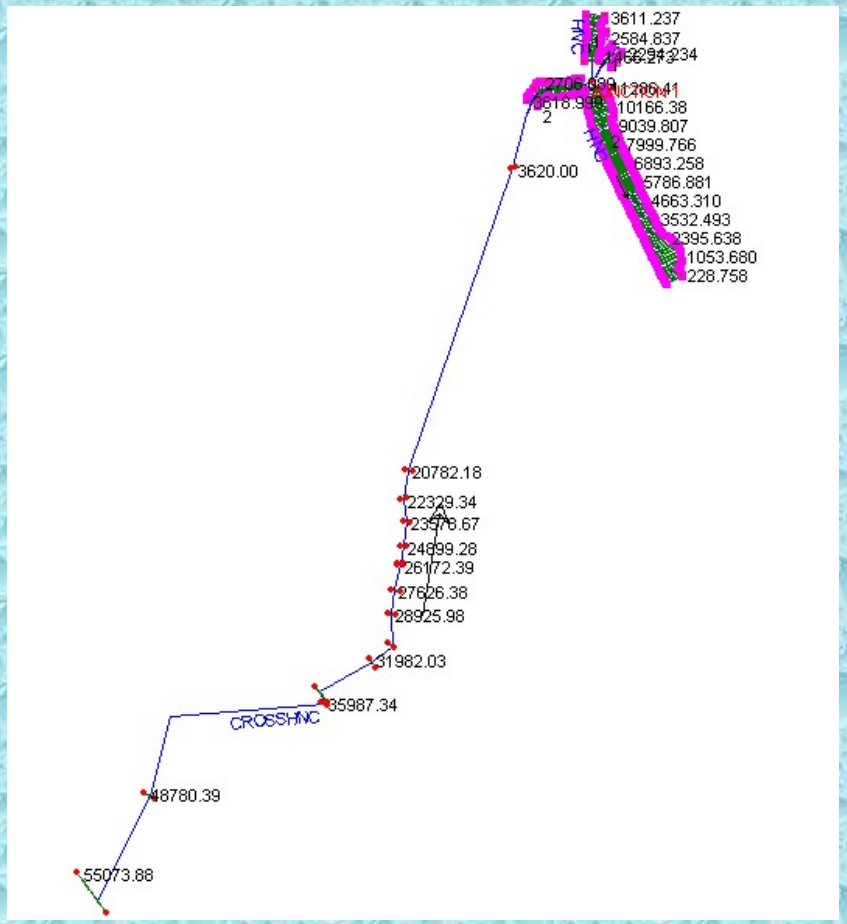
Modeling Procedure

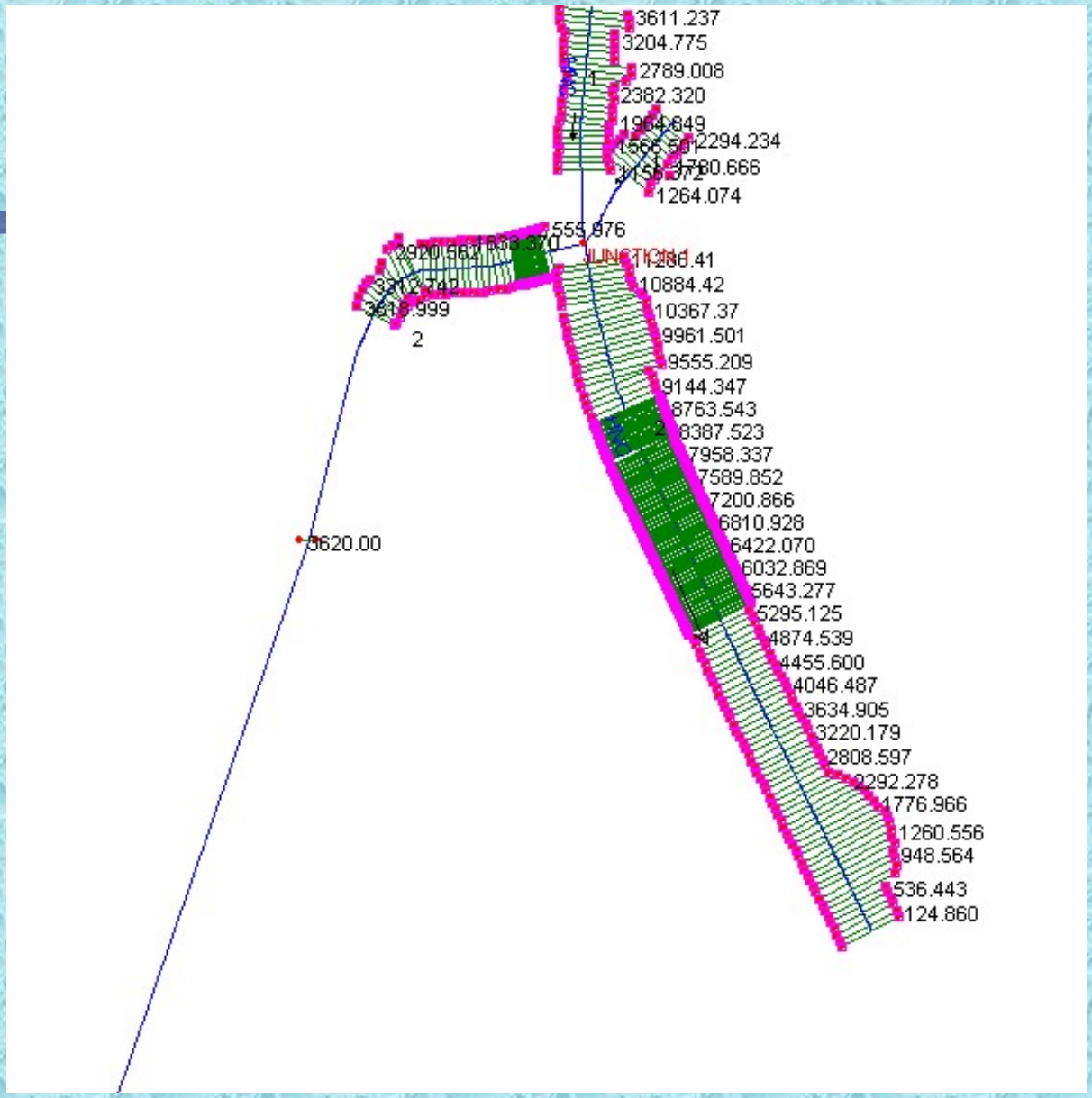
- Survey data is imported into a project file
- Channels are aligned and flow or stage boundary conditions are initiated
- Hydraulic model is verified to field hydrologic data

Procedure, continued

- After verification, proposed changes are made and comparison at specific points is conducted

Bayou Grand Caillou Model




3611.237
3204.775
2789.008
2382.320
1964.649
2294.234
1264.074
555.976
JUNCTION1
10884.42
10367.37
9961.501
9555.209
9144.347
8763.543
8387.523
7958.337
7589.852
7200.866
6810.928
6422.070
6032.869
5643.277
5295.125
4874.539
4455.600
4046.487
3634.905
3220.179
2808.597
1776.966
1260.556
948.564
536.443
124.860
3620.00
2

11/04/2004

Benefits to the MTOG Project

- Finding the most cost effective sized gate for this opening
- Testing operating procedure to predict changes in flow distribution
- Ability to easily change and compare parameters such as velocity and flow at the same position with different gates
- Provide hydrologic information to ERDC for HNC Physical Lock Model

Status of Modeling Effort

- Currently, the model has been verified and run for different gate scenarios. In an attempt to find a solution that will preserve the flows in Bayou Grand Caillou, more surveys were recently done. This was added to the existing model, but verification is necessary before continuing.

Funding Requirements

- Approximately $6,000 is needed to complete this project

Schedule for Completion

- Results for this part of the project is expected to be complete by November 22, 2004.

U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS
DISTRICT
SERVING THE ARMY...SERVING THE NATION